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REMARKS

Claims 1-30 are currently pending in the subject application and are presently under consideration. A clean version of all pending claims is found at pages 2-8 of this Reply. No claims have been amended herein.

Favorable reconsideration of the subject patent application is respectfully requested in view of the comments and amendments herein.

I. Rejection of Claims 1-11, 17-30 Under 35 U.S.C. §103(a)

Claims 1-11, and 17-30 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Kuchkuda *et al.*, (U.S. 5,872,902) in view of Nishiyama, (U.S. 5,949,442). This rejection should be withdrawn for at least the following reasons. Neither Kuchkuda *et al.* nor Nishiyama, alone or in combination, teach or suggest each and every limitation recited in the subject claims.

To reject claims in an application under §103, an examiner must establish a *prima facie* case of obviousness. A *prima facie* case of obviousness is established by a showing of three basic criteria. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. See MPEP §706.02(j). The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. See *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

The present invention relates to the field of video displays and more particularly to improved methods and apparatus for video underflow detection in a raster engine. Independent claim 1 recites, "*a control logic system associated with the FIFO memory and adapted to provide an underflow indication according to the first input and output counter values.*" Independent claims 17, 25, and 30 recite similar aspects. "The raster engine comprises an underflow detection system, which may provide an *indication* of

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*current or anticipated underflow conditions*, which may be provided to a system processor or other device for taking some steps toward remedying the cause of the underflow.” (Page 3, lines 13-16.) The raster engine of the claimed invention can “provide an *indication* to a host processor that the raster engine is *underflowing or about to underflow, or that a lockup condition exists* in the raster engine. Input and output counters in the raster engine first in first out (FIFO) memory system, which interface the host bus with the raster engine video systems, are read by an *underflow detection system* to provide an *underflow indication according to the counter values*. The underflow detection and indication system of the claimed invention minimizes or reduces undesirable visual effects associated with a starved or empty raster engine, and *allows remedial and/or notification measures to be taken in a computer system employing the raster engine*.” (See e.g., page 3, lines 21-30.) Kuchkuda *et al.* does not teach or suggest providing an underflow *indication*, or that an underflow *indication* is based on FIFO counter values as in applicant's claimed invention.

The Examiner contends that Column 19, line 1 of Kuchkuda *et al.* teaches a control logic system adapted to provide an underflow (and overflow) *indication*. However, and as stated in the previous Reply, the only mention of underflow, which occurs in the cited section of Kuchkuda *et al.*, (and not in any other section thereof) states that the “... six basic functions supported [by the RGBAUV blender block] are alpha blend, alpha unblend, X pixel operations, overflow and *underflow protection*, bilinear interpolation of texture texels, fog and haze and depth cueing.” (See Col. 18, line 66 – Col. 19, line 2.)

Applicant may be his or her own lexicographer as long as the meaning assigned to the term is not repugnant to the term's well known usage. *In re Hill*, 161 F.2d 367, 73 USPQ 482 (CCPA 1947). Any special meaning assigned to a term “must be sufficiently clear in the specification that any departure from common usage would be so understood by a person of experience in the field of the invention.” *Multiform Desiccants Inc. v. Medzam Ltd.*, 133 F.3d 1473, 1477, 45 USPQ2d 1429, 1432 (Fed. Cir. 1998).

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Contrary to the Examiner's contentions, underflow *protection* as used in Kuchkuda *et al.* and underflow *indication* as defined in the subject application are not synonymous terms. Underflow *indication* can be utilized to determine a *cause* of underflow, thus permitting *corrective action* to be taken. Additionally, an underflow indication can proactively indicate an imminent underflow occurrence, as discussed above. Kuchkuda *et al.* does not teach or suggest such aspects of applicant's claimed invention.

Nishiyama fails to overcome the aforementioned deficiencies of Kuchkuda *et al.* Nishiyama discloses a system wherein counters are utilized to facilitate smooth scrolling of display information in a display device. The Examiner relies upon Column 5, lines 52-53 of Nishiyama to teach control of an underflow indication (e.g., "...*prevent the occurrence of an interruption due to the next time-up of the timer* 6."). Nothing in the above language suggests that Nishiyama is capable of *providing an underflow indication*, let alone providing an underflow indication according to the first input and output counter values as in applicant's invention as recited in the subject claims. Nishiyama's "prevention of the occurrence of an interruption" merely reduces the possibility of an underflow occurrence when a clock resets - setting the P6 output to zero when the counter is full *does not indicate* underflow, but rather *merely avoids* underflow. Furthermore, Nishiyama fails even to mention or suggest underflow, let alone underflow detection or *indication*. If "the occurrence of interruption due to the next time-up of the timer" (Column 5, lines 52-53) is interpreted as "underflow," as suggested by the Examiner, then Nishiyama is incapable of providing an underflow *indication* because underflow should not occur ("the P6 is set to 0 in step 6 so as to *prevent* [underflow]..."). (Column 5, lines 51-52.) Put another way, if underflow is *prevented*, then there can be no occurrence of underflow about which the Nishiyama system can provide an indication. Furthermore, it is clear from the cited language that Nishiyama does not perform any active analysis of information in order to provide any *indication* of underflow.

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A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984)

As stated above, the Examiner's cited section is directed toward a system designed to "...prevent the occurrence of an interruption due to the next time-up of the timer 6. This aspect of the Nishiyama teaches against "*A control logic system 538 [that] is associated with the FIFO memory 516 and is adapted to provide an underflow indication 580, such as an interrupt to the CPU 562, according to the values of the input and output counters 534 and 536, respectively.*" (Page 40, lines 5-7.) That is, a reference that teaches *prevention* of a specific occurrence teaches against *providing* such an occurrence.

In view of the above, it is readily apparent that neither Kuchkuda *et al.* nor Nishiyama, alone or in combination, make obvious applicant's invention as recited in independent claims 1, 17 and 25 (and claims 2-11, 18-24, and 26-29, which depend respectively there from). Therefore, this rejection should be withdrawn.

## **II. Rejection of Claims 12-16 Under 35 U.S.C. §103(a)**

Claims 12-16 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Kuchkuda *et al.*, U.S. (5,872,902) in view of Nishiyama, U.S. (5,949,442) as applied to claim 1 above, and further in view of Rudin *et al.*, U.S. (5,959,640) and Reddy, (U.S. 6,195,079). This rejection should be withdrawn for at least the following reasons. Claims 12-16 depend from independent claim 1 — in view of at least the above comments, the subject invention as recited in these dependent claims is not made obvious by Kuchkuda *et al.* and/or Nishiyama, alone or in combination.

Neither Rudin *et al.* nor Reddy overcome the deficiencies of Kuchkuda *et al.* and Nishiyama with respect to independent claim 1. Specifically, neither reference teaches or suggests "*a control logic system associated with the FIFO memory that provides an underflow indication according to the first input and output counter values.*" Therefore, this rejection should be withdrawn.

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CONCLUSION

The present application is believed to be in condition for allowance in view of the above comments and amendments. A prompt action to such end is earnestly solicited.

In the event any fees are due in connection with this document, the Commissioner is authorized to charge those fees to Deposit Account No. 50-1063.

Should the Examiner believe a telephone interview would be helpful to expedite favorable prosecution, the Examiner is invited to contact applicant's undersigned representative at the telephone number listed below.

Respectfully submitted,

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